Australia's Vehicle Fleet
Dirty and falling further behind

KEY FACTS

CLIMATE ANALYTICS

Australia's transport emissions are 18% of Australia's total emissions.

Australia has no carbon emission standards for transport and by 2030 transport emissions are projected to be 82% higher than 1990.

Transport emissions have increased by 57% on 1990 levels.

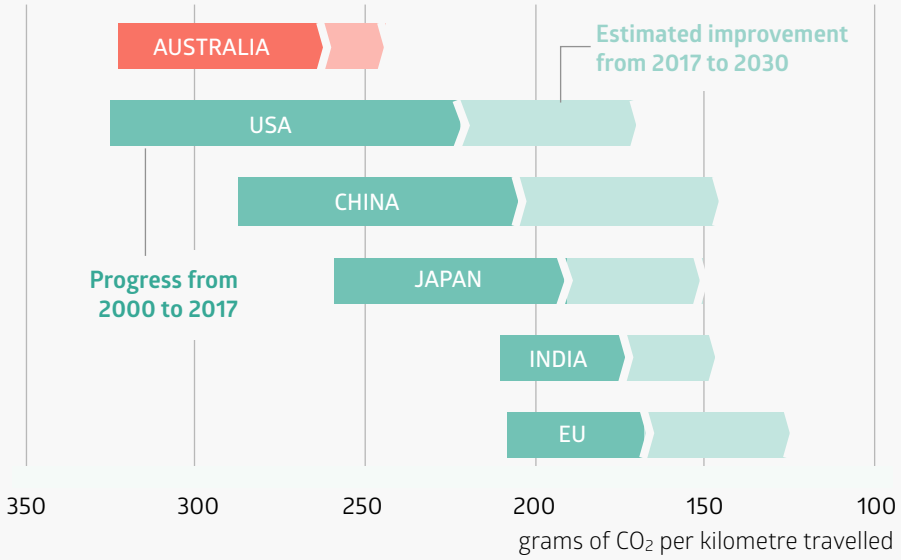
Nearly 80% of new light duty vehicles sold globally, including in China, Japan, India, UK, USA & the EU are subject to emission or fuel economy standards. Australia does not have efficiency or carbon emission standards for passenger vehicles or heavy-duty vehicles.

Australia: one of the world's worst transport polluters

Australia's combined vehicle fleet of 19.2 million vehicles is one of the world's most polluting and least efficient. Current lack of policies and the fact that over one million new vehicles are purchased per year, will mean Australia will continue to fall even further behind the rest of the world. Other countries are doing a much better job of setting policies to improve air quality, reduce emissions, deliver efficiency savings to drivers and offering better transport alternatives in cities.

Projections see very little improvement in the near future. Even emerging economies such as China and India are expected to make greater strides in improving their emissions performance than Australia.

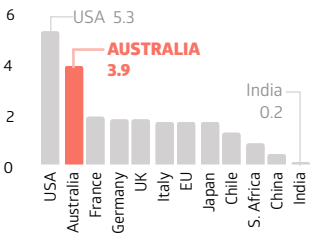
Comparing emissions performance of car and truck fleet



Transport emissions per person

tonnes CO_2 / person

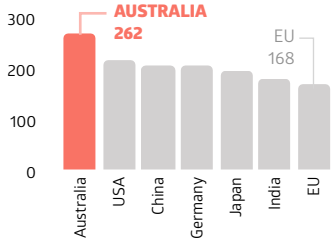
2012 Rank: 2nd last of 12



Fleet emissions intensity

g CO_2 / vkm

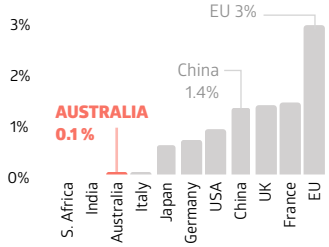
2017 Rank: Last of 7



Electric Vehicle Market Share

percentage of sales

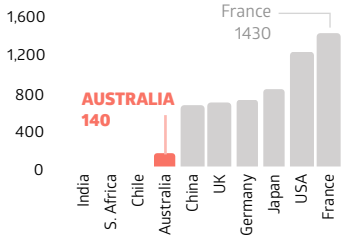
2014 Rank: 3rd last of 11



Electric Vehicle Stock

EVs / 1 Million persons

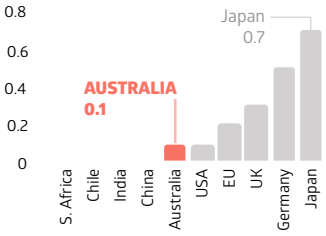
2014 Rank: 4th last of 10



Hydrogen Fuelling Stations

stations / 1 M persons

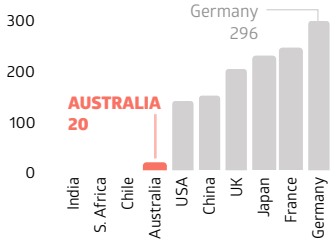
2014 Rank: 5th last of 10



Publicly Available Chargers

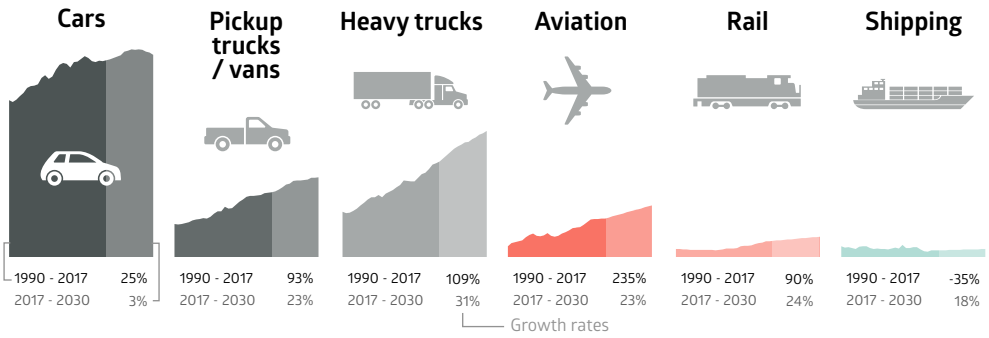
chargers / 1 M persons

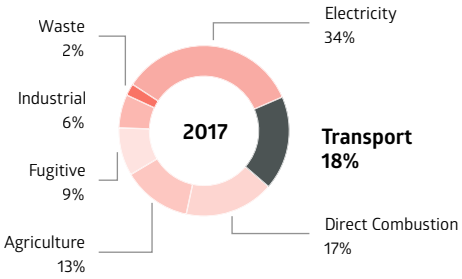
2016 Rank: 4th last of 10



AUSTRALIA'S TRANSPORT EMISSIONS ARE GOING UP

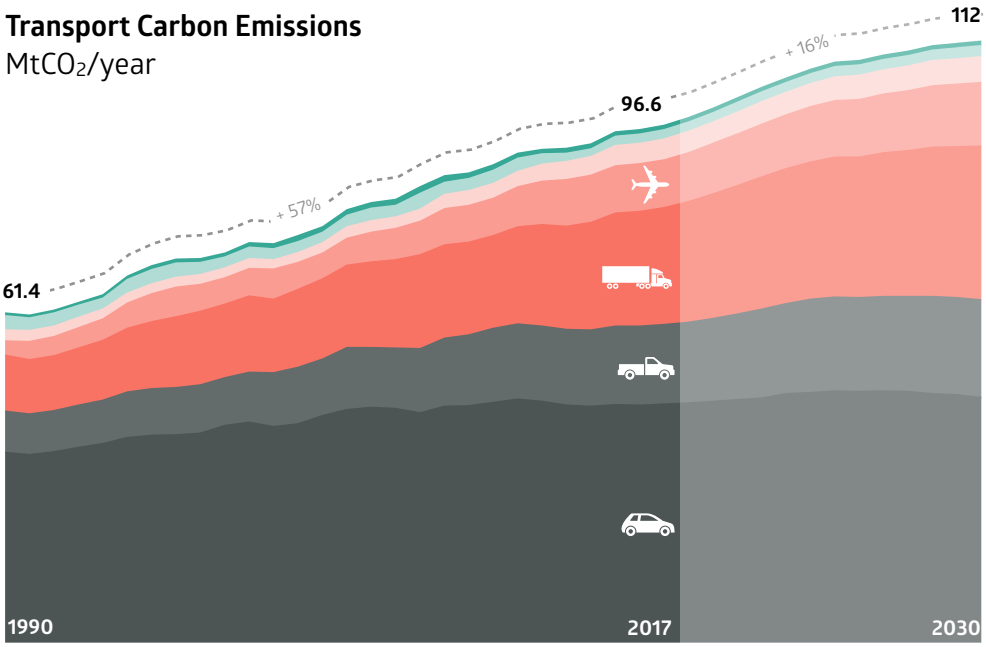
The transport sector is the second largest source of emissions in the Australian economy, and emissions are growing fast. In 2017 transport represented 18% of total emissions and has increased by 57% since 1990. By 2030, transport emissions are projected to be 82% higher than 1990.





Cars currently represent the largest source of transport emissions. Car emissions have grown by 25% since 1990. Emissions from heavy trucks have more than doubled from 1990 to 2016 and are expected to grow faster than any other transport emissions. Domestic air travel makes up 9% of Australian transport emissions.

Transport Carbon Emissions
$MtCO_2$/year



TRANSPORT EMISSIONS STILL RISING...

Australia's transport emissions are continuing to rise due to high polluting cars, more cars on the road, low share of trips taken by public transportation and increased demand for freight driving truck emissions. Australia has no effective national policies in place to reverse this trend. Implementing emissions - or fuel economy - standards is an important first step and crucial for any realistic plan to reduce emissions.

...WHEN THEY SHOULD BE FALLING

However, meeting Australia's climate commitments through the Paris Agreement will require steep reductions in emissions across the entire economy. A paradigm shift towards zero emission vehicles is a key ingredient to achieving this.

THE PARIS AGREEMENT TEMPERATURE GOAL
WHAT DOES IT MEAN FOR TRANSPORT?

The Paris Agreement, ratified by 181 governments is a remarkable achievement for multilateralism and a landmark in the global fight against climate change, aiming to reduce the risks and impacts of climate change by holding warming to well below 2°C and pursuing efforts to limit it to 1.5°C above pre- industrial levels.[1]

Achieving a 1.5°C limit requires urgent and comprehensive action. Every sector of the economy will be required to play its part in the deep and rapid decarbonisation of the overall economy.

For the road transport sector - including freight transport - it means getting to zero emissions by 2050, especially in advanced economies. By 2035, most cars sold globally need to be zero-emission vehicles for the world to meet the Paris Agreement's 1.5°C warming limit. Such a transition will be much easier with a reduction—and modal shift—of demand for personal transport and shifting freight transport to rail where possible.

Government policy will be critical in enabling and speeding up this transition.

181 COUNTRIES
HAVE RATIFIED

1.5°C LIMIT
TEMPERATURE GOAL

TRANSPORT EMISSIONS
ZERO BY MID CENTURY

CARS
MOSTLY ZERO EMISSIONS VEHICLES SOLD BY 2035

POLICY CHECKLIST

Australia has very little in the way of national transport policies and it shows. In most indicators, Australia lags behind most other major economies. The transport sector accounted for 18% of total GHG emissions in Australia in 2015, making it the second largest source of greenhouse gas emissions.

Road transport accounts for 82% of these emissions, due to the fact that Australians own a lot of inefficient vehicles and drive them long distances resulting in very high levels of per capita transport emissions. Having strong efficiency and emissions standards for vehicles is vital in improving fleet efficiency, something the Australian government has yet to implement. Supporting the transition to future technologies such as electric vehicles is also vital. Australia needs to do more to increase the near zero market share.

EMISSIONS/EFFICIENCY STANDARDS FOR LIGHT AND HEAVY VEHICLES

Nearly 80% of new light duty vehicles sold globally are subject to some kind of emissions or fuel economy standard. Only four countries—Canada, China, Japan and the United States—have introduced efficiency standards for heavy-duty freight vehicles. The EU is about to introduce them.

Australia does not have any efficiency or carbon emissions standards for passenger vehicles, let alone heavy duty vehicles.

SPOTLIGHT ON:
EUROPEAN UNION

The European Union has the lowest fleet average efficiency targets. Many countries follow the EU example. The current EU CO_2 efficiency targets are 95 g/km for passenger cars (in 2021) and 147 g/km for light commercial vehicles (in 2020). The EU is currently discussing increased standards in 2030 as well as standards for heavy transport.

	Australia	USA	China	Japan	India	France	UK	Germany	Italy	EU
Light Duty Vehicles	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heavy Duty Vehicles	✗	✓	✓	✓	✗	–	–	–	–	–

DATE FOR BANNING INTERNAL COMBUSTION ENGINES UNDER CONSIDERATION

In recognition of the future of electric vehicles and the air pollution problems of traditional internal combustion engines (ICE), a number of countries have announced plans to phase out ICE vehicles by setting dates from which they will be banned - to provide certainty for both manufacturers and consumers.

Australia has no comparable efforts to show.

SPOTLIGHT ON:
FRANCE

The French Government's 2017 Climate Plan pledges to "take greenhouse gas emitting vehicles off the market by 2040: stopping sales of petrol or diesel cars will encourage car manufactures to innovate and take the lead on this market."

Australia	USA	China	Japan	India	France	UK	Germany	Italy	EU
✗	✗	✓	✗	✓	✓	✓	✗	✗	✗

STRATEGY, TARGETS, AND INFRASTRUCTURE SUPPORT FOR ZERO EMISSION MOBILITY

The future is electric - with electric and green hydrogen powered fuel-cell vehicles (including trucks) and 100% renewable energy power. The government can do much to ease and speed up the transition.

Australia has no strategy, no targets, and very little policies in place.

SPOTLIGHT ON:
CHINA

China made electric vehicles a priority in its “Made In China 2025” policy initiative, which aims to comprehensively upgrade Chinese industries. China plans for one million units of new energy vehicles sold in 2020, and world leadership in batteries and electric motors.

Australia	USA	China	Japan	India	France	UK	Germany	Italy	EU
✗	✓	✓	✓	✓	✓	✓	✓	✓	✓

THERE ARE MANY REASONS TO GO GREEN

Beyond honouring Australia's commitments made under the Paris Agreement there are many reasons to green our transport beyond avoiding dangerous climate change. Really, it's a win-win-win for people, the environment and the economy.

CLEANER AIR

Depending on the city, motor vehicles can be one of the largest sources of outdoor air pollution, contributing to 5.4% of deaths worldwide. Instead of increasing diesel use, which is starting to be banned in cities across the world, adopting zero emissions vehicle technologies and improving public transport will dramatically improve air quality in our cities and the health of all who live in them.

HEALTHIER BODIES

Besides cleaner air, higher rates of public transport, walking and biking have obvious health advantages. For example, the benefits of regular cycling include increased cardiovascular fitness, increased muscle strength and flexibility and decreased stress levels. Even regular walking can slash your risk of chronic disease.

MORE LIVEABLE CITIES

In addition to improving air quality, supporting programs to provide alternative transport options and reduce car dependence can not only reduce emissions significantly but make our cites much more liveable. Better public transport, car sharing, urban design, increasing housing density, walkable neighbourhoods, bike pathways can make our cities safer, quieter and healthier.

SAVE AUSTRALIA MONEY

After coal-fired power stations, motor vehicle emissions are the second-largest source of air pollutants (oxides of nitrogen and carbon monoxide) nationally. The OECD has estimated that the economic cost of Australian motor vehicle emissions was about $5.8 billion in 2010. Moving to zero emissions would also avoid oil imports. Instead, Australia can use its abundant wind and solar energy resources.

LESS TRAFFIC CONGESTION

Sitting in traffic can be frustrating, mostly because we sense what a pointless waste of time it is. But congestion has very real costs in terms of productivity. Congestion in Australia costs the economy more than $16 billion a year - a figure that is expected to increase. Adopting public transport policies could tackle congestion and hence decrease lost time, air pollution and vehicle costs.

BOOST EMPLOYMENT

Other countries have already recognised the opportunities for job creation in a green economy. China aims to comprehensively upgrade Chinese industries by seeking world leadership in batteries and electric motors. Japan recognises that hydrogen can greatly cut emissions, be produced with renewable energy sources but will also generate beneficial economic ripple effects, i.e. new jobs.

GOOD FOR THE GRID: STORING ELECTRICITY

Australia has an opportunity to be a world leader in the transition to a zero emissions and green hydrogen economy. Electric vehicles and hydrogen fuel cell cars and trucks can store and use surplus electricity produced from renewable energy. Australia can be a world leader - with very high potential for cheap solar and wind energy - and can develop new industry opportunities.

BENEFIT AUSTRALIA'S LITHIUM INDUSTRY

"The new frontier for battery minerals". The currently $165 billion global lithium value chain will grow to a conservatively estimated $2 trillion by 2025. As one of the leading global lithium miners, Australia has a fantastic opportunity to expand down the lithium value chain, for example to domestically manufacture batteries - and electric vehicles.

EXAMPLES WORTH FOLLOWING

ZERO EMISSIONS VEHICLE CHALLENGE
AN ENDGAME FOR FOSSIL-FUEL VEHICLES

The recently launched global ZEV (Zero Emissions Vehicle) Challenge unites state and regional governments, cities and businesses representing millions of dollars in purchasing power across the world to accelerate the global manufacture of Zero Emission Vehicles.

The ZEV Challenge is being supported by: the State of California, New York City, EDF Energy, LeasePlan and Unilever. In addition, the cities of Paris, London, Milan, Copenhagen, Pittsburgh, Mexico City, and Medellín, as well as the Australian Capital Territory (ACT).

THE NETHERLANDS
FROM DEATH TOLLS TO CYCLE NIRVANA

In the 1970's, in just one year Dutch cars killed over 400 children. But then the Dutch made a change – fierce activism and decisive public policy challenged the dominance of the car by creating public spaces where cars were banned, reinstating and improving bike lanes, establishing car-free days, and crafting transport policies that put people first.

Today, all major Dutch cities have designated "bicycle civil servants", tasked to maintain and improve the network. And the popularity of the bike is still growing, thanks partly to the development of electric bicycles. Proof that one can turn a bike wasteland into a bike wonderland with political support.

NATIONAL POLICY PERFORMANCE

VEHICLE EMISSIONS STANDARDS
TALK AND NO ACTION

Since 2015 the Australian Government has been consulting on mandatory fuel emissions standards. It established a Ministerial Forum to coordinate Federal and State government approaches to addressing emissions from motor vehicles, including consideration of a fuel efficiency standard for light vehicles, but has not yet taken any decisions. The Forum intends to provide a draft implementation plan on potential measures for consideration by Government.

Meanwhile Australia continues to have no efficiency or carbon emissions standards for passenger vehicles, which cause the largest share of emissions, only relying on information programmes such as the Green Vehicle Guide.
Nearly 80% of new passenger vehicles sold globally are currently subject to some kind of GHG emissions or fuel economy standards and with good reason.

Adopting strict standards could prevent up to the equivalent of 65m tonnes of carbon dioxide emissions by 2030, which is significantly more greenhouse gas pollution than New South Wales' entire coal fleet produces in a year. They would also significantly reduce car owners' fuel bills, saving an estimated $8,500 over a vehicle's lifetime. The sooner this changes, the higher the impact.

EMISSIONS STANDARDS COULD SAVE THE AVERAGE DRIVER

$8500

OVER A VEHICLES LIFETIME

ZERO EMISSIONS VEHICLES
POLICY VISION WANTED

Australia has no overarching zero emissions transport policy, despite the fact that industry groups, such as Hydrogen Mobility Australia and scientific and expert advisers such as the Climate Council are asking for a national strategy. Policy inaction and lack of support holds back the adoption of zero emissions vehicles, Zero emissions transport policy needs to be linked to a plan to transition to 100% renewable electricity generation.

Australia needs to set targets for the transition away from combustion engines and to electric vehicles, and support infrastructure development such as charging stations.

DECARBONISE FREIGHT TRANSPORT
MODERN RAIL, STANDARDS, INNOVATION

Emissions from freight transport are growing fast. Policies are urgently needed to address these.
In addition to fuel efficiency standards and support for zero emissions trucks and charging/fuelling infrastructure, the government can introduce incentives and regulation to move more freight transport from trucks to rail.

With a strategy and policy package, together with zero emissions electricity production, emissions from freight transport can be reduced to zero by 2050. This needs to - and can be - achieved, to be in line with the Paris Agreement's temperature limit.

Australia can be a world leader - and benefit from improved air quality, reduced noise in cities and towns across the country, and new industry opportunities in a green hydrogen and lithium economy.

STATES AND CITIES LEADING THE WAY

ZERO EMISSIONS
THE FUTURE IS ELECTRIC

The ACT government and Transport Canberra have trialled electric and hybrid buses and ACT has now released an Action Plan for zero emissions vehicles.

ACT - with a target to achieve net zero GHG emissions by 2045 - has introduced financial incentives for zero emissions vehicles (exemptions from stamp duties, reduced registration fees), adopted zero emissions vehicles in Government fleet, and is investigating opportunities for production of hydrogen fuel and deployment of fuel cell Electric Vehicles in the government fleet.

ACT has also signed a memorandum of understanding with other Australian jurisdictions to work together to promote the uptake of electric vehicles, by taking a coordinated approach to the strategic planning and construction of infrastructure for electric vehicles, share information and seek alignment of policies. Each jurisdiction agreed to develop an action plan to increase the share of Electric Vehicles in fleets. Signatories include Western Australia, South Australia, City of Adelaide and City of Hobart.

MELBOURNE
PUBLIC AND ACTIVE TRANSPORT

This year, Vienna - where more trips (54%) are now made by public transport than by private vehicles, overtook Melbourne as the most liveable city worldwide. And in a recent Quality of Life Survey conducted by Monocle, the urbane lifestyle magazine, Melbourne also made it into the list of top 10 cities worldwide.

One of the elements for success is public transportation. Around 800,000 people move through Melbourne every day, and this is expected to increase to more than one million by 2030. Improvements to the walking environment, upgrades to the cycling network and options for city freight delivery are important elements of its integrated transport strategy.

Cycling, for example, provided a boost to the local economy. When the city converted two on-street car parking spaces to parking for 24 bikes, four times more spending was generated at local businesses than if the space was used for cars - $4042 a day compared with $994.

The city also supports car sharing services for residents who don't own a car.

ABOUT THE AUTHOR

CLIMATE ANALYTICS

Supporting science-based policy to prevent dangerous climate change, enabling sustainable development.

Climate Analytics is a non-profit climate science and policy institute based in Berlin, Germany with offices in New York, USA, Lomé, Togo and Perth, Australia, which brings together interdisciplinary expertise in the scientific and policy aspects of climate change. Our mission is to synthesise and advance scientific knowledge in the area of climate change.

climateanalytics.org

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Graph: Fleet emissions intensity
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Graph: Electric Vehicle Market Share
Source: IEA (2018). Global EV Outlook.

Graph: Electric Vehicle Stock
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Graph: Hydrogen Fuelling Stations
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Footnote

1 - Conceptualising the Paris Agreement's temperature goal
More than two decades of international climate negotiations laid the groundwork for the Paris Agreement and it is with this rich history in mind this treaty should be understood and conceptualised, particularly with regards to the long-term temperature goal.

At the Earth Summit in Rio de Janeiro in 1992 the UN Framework Convention on Climate Change (UNFCCC) was adopted with the ultimate objective being the "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (United Nations, 1992). Importantly, it had neither been clarified what level of climate change is to be considered "dangerous", nor was there an agreement on the exact concentration levels required to reach that objective. It was only in the Copenhagen Accord from 2009 that the first long-temperature goal of limiting the global temperature increase to **below 2 degrees Celsius** was mentioned (UNFCCC, 2010). During the subsequent COP16 in Cancun in 2010 the Parties adopted the 2°C limit, expressed as the aim "to hold the increase in global average temperature below 2°C above preindustrial levels".

Notwithstanding this decision, in 2010 the UNFCCC established a review process to evaluate whether the long-term global temperature goal of holding warming below 2°C was adequate to avoid dangerous climate change and to consider "strengthening the long-term global goal on the basis of the best available scientific knowledge, including in relation to a global average temperature rise of 1.5°C". In 2015 the Structured Expert Dialogue ended with the conclusion that a warming of 2°C cannot be considered safe (UNFCCC, 2015b). This has ultimately led to the Paris Agreement's objective to "pursue efforts to limit" global warming to 1.5°C above preindustrial, while holding warming to "**well below 2°C"**.

The Paris Agreement's long-term temperature goal therefore goes beyond the Cancun Agreements' 2°C temperature limit.

Under the long-term temperature goal (Article 2.1) of the Paris Agreement, Parties agreed to "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognising that this would significantly reduce the risk and impacts of climate change".

VIEW THE OTHER FACTSHEETS

FACTSHEET 1
AUSTRALIAN ECONOMY

FACTSHEET 2
ELECTRICITY SECTOR

FACTSHEET 3
TRANSPORT SECTOR

FACTSHEET 4
INDUSTRY